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ABSTRACT

Traditional research on community college transfer students tracks students from the community college to the transfer institution, comparing the performance of students in various cohorts, such as demographic groups, majors in different curricula, and graduates versus early transfers. While these studies can provide interesting information, they do not create the incentive to act among faculty, since faculty cannot change students' demographic backgrounds or make them complete a certain number of credits before transferring. To provide faculty with more specific information on student outcomes, Virginia's Thomas Nelson Community College (TNCC) and Christopher Newport University (CNU) have jointly developed the Course-Based Model of Transfer Success. The model seeks to determine how well students who complete prerequisites at TNCC perform in subsequent courses compared to students completing the prerequisites at CNU. Results from the implementation of the model have indicated that TNCC students generally perform at a level equal or higher to students completing prerequisites at CNU. It has also helped pinpoint problem areas, however, such as low performance levels by students in a computer science prerequisite course, resulting in the reorganization of the course sequence. CNU has also discovered problem areas, including three business courses, a Principles of Psychology course, and a two-part writing sequence. Contains a table showing student outcomes by discipline and 16 references. (BCY)

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COMMUNITY COLLEGE

The Course–Based Model of Transfer Success: An Action–Oriented Research Paradigm

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Abstract

This paper describes a new paradigm for evaluating transfer success that could greatly enhance the ability of the nation's community colleges and four-year colleges and universities to improve the success of transfer students. It provides faculty with action oriented results they can use to improve students' prepartion. The basic difference between this new paradigm and those commonly employed in transfer research is that it is course-based rather than student-based. This shift is simple but crucial.

Traditional research tracks particular students from the community college to their transfer institution. It typically compares performance of students in various cohorts (e.g., demographic groups, majors in different curricula, or graduates versus early transfers). All of this information is interesting but it does not create the incentive to act. Faculty can not change students' demographic backgrounds or make them complete at least 30 hours before transferrring. Even if they find that graduates in their curriculum experience difficulty when transferring, faculty need more specific information to correct the problem.

Our Course-Based Model of Transfer Success yields information that shows how well students who complete course prerequisites at a community college perform in specific courses compared to students who complete the prerequisites at the receiving college. This pinpoints for faculty exactly where students experience difficulty. It also creates a sense of urgency. Faculty agree that students who pass their course are prepared for subsequent courses which require that course as a prerequisite.

The model has proven very useful in local applications and has been presented at two national conferences. We have submitted a proposal to the Fund for Improvement of Postsecondary Education that will allow us to develop a generic version of the tracking system that will be tested statewide in Virginia. We will construct the model from data that already are being collected centrally in over 80 percent of the states so that colleges will have minimal requirements to adopt the model and statewide coordination and reporting will be possible.

Introduction

Evaluation of the community college transfer mission typically fails to answer clearly what is arguably its most essential question: How do students' academic preparations at the community college contribute to their academic success at four-year colleges and universities? Recent literature suggests a number of limitations that account for the failure to answer this question.

1) A necessary component of successful transfer is detailed course-by-course cross-institution comparisons of required competencies (Brinkman, 1994; Gill, 1992). However, such analysis on the front end is rarely, if ever, matched by empirical validation that course-specific preparation had intended course-specific results at the four-year institution.

2) Transfer rate, or the likelihood that a community college's students will transfer, has been extensively modeled and researched. However, models of student transfer typically do not account for program of study (McMillan and Parke, 1994). In addition, integrated findings across institutions are only minimally useful since the critical ways in which community colleges differ, e.g. in their liberal arts curriculum, become lost in the synthesis (Palmer, 1991). There is evidence liberal arts offerings affect transfer rates (Armstrong, 1993) but even if true, that information does not identify what specific courses contribute to transfer students' academic success.

3) Surveys of former community college students typically confirm they perceive they are meeting their educational goals and are satisfied with their preparation (Bogart and Price, 1993; Conklin, 1993). However, studies focusing on particular courses (Ellefson-Kuehn, 1995) are rare and limited by self-report biases.

4) Research on former community college students' grades or baccalaureate graduation rates typically do not compare results between these students and native students (e.g., Graham and Hughes, 1994). A few studies providing such comparisons reveal mixed results and tend to focus on demographic factors to explain any differences (Anglin, 1995; Diaz, 1992; Head, 1992; Stoltz, 1992; Vaughan and Templin, 1987). Correctable curriculum differences are uniformly missing from the discussion.

In cooperation with nearby transfer institutions, Thomas Nelson Community College (TNCC) has confirmed the above conclusions after nearly a decade of studying student transfer success. In 1989, we conducted a major study on transfer success with Christopher Newport University (CNU), the primary transfer destination of our students. We examined detailed records for over 1,800 students and were able to identify several statistically significant trends based on such variables as hours completed prior to transfer, ethnicity, age, and gender. A group of faculty representing both colleges was given reassigned time to review the results. They also had a programmer analyst from TNCC's research office to run follow-up analyses and hired a consultant to interview students about their transfer experience. For a full year, the faculty and research staffs pored over the analyses and discussed the trends. It was not until we came to the point of making recommendations that we began so see the limitations of this approach, particularly from a faculty standpoint. A finding that women and older students tend to perform better

is interesting from a sociological perspective and may have implications for student services personnel, but it has little or no relevance to the curriculum and is of very limited use in advising. Information on how various majors perform upon transfer provides more meaningful data, but little in the way of direction.

Dever (1995) encountered this difficulty when he conducted a detailed study of TNCC students who transferred to Old Dominion University (ODU) between Fall 1986 and Fall 1993. Through analysis of actual transcripts at both colleges, he tracked students' performance by major at TNCC and at ODU. He developed three categories of transfer students—degree completers, over 30 hours completed at TNCC, and 13-30 hours completed at TNCC—and seven levels of progress based on combinations of grade point average and persistence. He examined performance levels for students from the various majors at TNCC and performance in the various majors at ODU. The study was thoughtful and detailed. It produced a number of statistically significant and provocative findings. Invariably, though, these findings required additional research before action could be warranted. For example, he found that students from TNCC's business administration curriculum were significantly less likely to perform successfully than were those from other curricula. This is good to know, but before the colleges can take corrective action they need to determine why these students experience difficulty.

The basic problem with traditional research on transfer is that it focuses on students as the unit of analysis. Results are too general to suggest specific actions. Academicians can not fix students; they can prepare them more effectively. This realization, born from years of fascinating but frustrating research on transfer, led us to re-think our approach to the topic.

The New Paradigm

Working with Christopher Newport University, we devised a new paradigm that we feel is much more useful to both community colleges and four-year institutions and is directly relevant to faculty and the curriculum. We call it a *Course-Based Model of Transfer Success*. The idea is simple, relatively easy to implement, and provides comprehensive data that are immediately and obviously relevant to faculty at either type of institution. In short, it provides useful information.

Basically, we developed a tracking system that examines every course having a prerequisite that could be met at CNU, TNCC, or at another college. For each course so identified, the program provides a grade distribution for students broken out by semester by whether the prerequisite was taken at Christopher Newport University, at Thomas Nelson Community College, or at another institution. A summary for each course totals grades across all semesters and a discipline summary totals grades of all courses in the discipline and then for all semesters included. We now have data from Spring 1990 through Spring 1996 for TNCC and CNU. We also have extended the methodology to Old Dominion University and Tidewater Community College. Both universities now can provide feedback to both community colleges. Finally, we have begun creating computer files for each institution to develop its own customized analyses. This feature has proven especially useful by providing a variety of perspectives.

The results we have obtained thus far are very encouraging for the community colleges. (See table on page 8). Generally, we have found that students who complete course prerequisites at TNCC perform at a level equal to or higher than students who complete prerequisites at CNU. The real strength of our new paradigm is that when a problem is identified it can be pinpointed to a specific course at the community college and at the receiving college. Faculty take ownership for students who have successfully completed their course(s). If those students are not prepared for subsequent coursework, faculty want to know why. Demographic considerations do not matter when a faculty member has certified the student has mastered course requirements.

This paradigm also works well within a total quality or customer service orientation. The receiving institution and the transferring institution have a customer/supplier partnership with shared interest in students' success. Identifying course-specific deficiencies allows quick and continuous improvements to be implemented and tested.

How We Have Used the Model

Thomas Nelson Community College

The first time we ran course-based transfer comparisons we discovered that students who completed a computer science prerequisite at TNCC did not perform as well as their CNU counterparts. These data were shared with the department head at TNCC. After consultation with faculty at CNU, he determined that the most likely cause of the difficulty was not in course content but in the sequencing of courses within the curriculum. The course at CNU relied heavily on programming skills taught in the

first year at TNCC. Students who transferred learned the skills, but would not have used them for a year. By moving the course to the second year, TNCC students would learn the skills and then build upon them immediately after transferring. Since this change, the performance of TNCC transfers has been comparable to native students at CNU.

We also are adapting this model to examine other areas of concern at the college. For example, we are comparing subsequent grades for students who complete prerequisites through telecourses with those who complete them through classes offered in traditional formats.

Christopher Newport University

Christopher Newport University has noted several findings which have consistently emerged from the course-based studies of transfer success during the past two years. Since hundreds of students enroll in the affected courses each term, the data are deemed important and have generated the actions described below. In particular, for three business courses (Principles of Marketing, Principles of Management, and Legal Environment of Business), all of which require the two-semester Principles of Economics as a prerequisite sequence, better grades have been associated with earning the prerequisite credit at a transfer institution.

The fact that economics and business courses are taught in different departments suggested there was little coordination between the departments regarding these courses. The prerequisites are appropriate and affect performance in the target course; however, instructors in the two disciplines had not spent much time communicating with each other on how to improve students' preparation for the target courses. To correct this omission, instructors of the target courses agreed to evaluate the prerequisite course content and advise which units and concepts within those units are particularly essential for their courses. This information will be passed on to economics course instructors with the request that they make appropriate adjustments in their courses in the light of this study. The director of assessment and evaluation will report subsequent years' data directly to the dean of the college of business and economics who is overseeing this project.

Principles of Psychology II is the second half of the introductory psychology sequence at CNU. Grades for the second half of the sequence tend to be significantly better when the first half of the sequence has been taken at another institution.

These results have been discussed with the psychology department and the following tentative conclusions have been reached. Principles of Psychology I should be considered the first course in a two-course survey sequence in which the topics in the first half overlap very little with the topics in the second half. However, courses taught elsewhere which are counted as equivalent to the first course may in fact have several topics overlapping with CNU's Principles of Psychology II. This most often occurs when the introductory psychology course has been compressed into one semester. Therefore, these students will appear better prepared because they will be repeating some of the topics and units they have studied already. The psychology department is not sure the findings indicate a problem since they may result from the sequence of topics covered rather than the adequacy of the preparation. This discussion was important for the course-based project because it forced attention on the difference between essentially non-overlapping sequential courses and true prerequisite-target course sequences. We will continue monitoring these courses to test the validity of the faculty's hypothesis.

College Writing II is the second half of the required introductory writing sequence. Again, grades for the second half of the sequence were significantly better when the first half had been completed at another institution.

At Christopher Newport University, College Writing I and II were thoroughly revised during 1994-95 to emphasize the interconnectedness of writing and reading skills and the sequential development of more complex writing skills. Simultaneously, standards also have become more rigorous. In view of these recent changes, the English department does not necessarily draw a connection between these findings and College Writing I as it is taught currently. However, the department agrees that it is important to continue to look at these data during the next few semesters as part of its ongoing evaluation of the writing curriculum. By comparing performance for students completing the course after these changes with those previously obtained we will be able to evaluate if the changes are producing the desired results.

Another study applied the same model to the assessment of CNU On-line, the computer-managed instructional delivery system of Christopher Newport University. This study examined the question of how students performed in spring courses for which the prerequisites could be taken in the fall either on-line (i.e., via modem) or in the classroom. English 101, English 207G, and Spanish 101, the first courses in two-course sequences, were offered in the fall in both modes. The subsequent courses offered in the spring were English 102, English 208G, and Spanish 102. (The term "prerequisite" may be inaccurately applied in some instances; e.g., English 207G was not strictly a prerequisite for English 208G, but it was included here as the first course in a two-course sequence.)

Part I of this study looked at those who had enrolled in the second course on-line. It exaimed the mode in which the prerequisite was taken and how student performance was affect by this mode of instruction. The data revealed that fall on-line students who returned for a second on-line course in the spring performed better when compared with those who took the prerequisite in a classroom.

However, the interpretation of Part I by itself was ambiguous. It was unknown from these results how much of the difference could be attributed to experience with the bulletin board system and on-line pedagogy versus the learning which presumably occurred through the on-line vehicle. Therefore, Part II was logically required because it was essential to know how well the students with on-line experience in the prerequisite might do in a classroom course for which the first course was a prerequisite. Would these students' performance be comparable with traditionally taught students in the same course?

However, due to the relative newness of CNU On-line, the plan designed to provide an answer to the above question has so far failed to yield such an answer. Based on two semesters (94-95) alone, only one person who had taken the prerequisite on-line enrolled for the second course in the classroom mode. While this individual clearly was not disadvantaged by the on-line prerequisite, one person could not provide enough data to draw a conclusion. As more semesters of on-line experience accumulate, it will be possible to gather sufficient data to test whether students with the on-line experience perform comparably on a second classroom course for which the on-line course was prerequisite.

A further study applied this model to the assessment of a global requirement at Christopher Newport University. Global courses were those certified by curriculum review for their significant content contributing to international, particularly non-western, perspectives.

Christopher Newport University target courses in this study were so designated because these courses' prerequisites included either global or non-global coursework. Final grades for the target courses were categorized by letter grade and by whether the student had taken a global prerequisite only, a non-global prerequisite only, both types of prerequisites, or no prerequisites at all. The analysis tested whether the type of prerequisite made a difference in the final grades in the target courses. A second aim was to see whether, if the global/non-global contrast was unrelated to target course grades, there was an advantage to some prerequisites versus none at all.

The short version of the answer to the first question was that the type of prerequisite, global versus non-global, apparently made no reliable difference in the target course grades. Furthermore, for the majority of comparisons, the answer to the second question was the prerequisite gave students no detectable advantage.

This finding, of course, raised several questions which will continue to stimulate inquiry. How do students avoid the listed prerequisites? Were these valid exceptions or the result of inadequate controls? Perhaps more important, however, these data have initiated discussion about the appropriateness of prerequisites and the role of survey courses in the curriculum.

Conclusion

Our experiences at both CNU and TNCC increasingly show that the greatest strength of the course-based model of assessment is that it forces us to question our assumptions. The data produced by the model are so compelling and unambiguous in either confirming or disconfirming our expectations that they create the impetus for change. Our proposal to FIPSE will allow us to develop and test a generic version of the model in Virginia in preparation for a national distribution. Look for the new model to be coming to a state near you soon.

Chi-Square Analyses
Spring 1990 to Fall 1994

Discipline	College / University								
	Christopher Newport (CNU)			Thomas Nelson (TNCC)			Other		
	N	% A,B,C,P	% D,F,W	N	% A,B,C,P	% D,F,W	N	% A,B,C,P	% D,F,W
Accounting	265	66.4	33.6	98	74.5	25.5	103	68.9	31.1
Biology	135	83.0	17.0	11	91.0	9.0	19	79.0	21.0
Business *	2017	90.3	9.7	398	93.7	6.3	419	92.1	7.8
Chemistry	68	54.4	45.6	24	45.8	54.1	18	72.2	27.7
Computer Science *	1564	74.8	25.1	136	75.7	24.2	133	87.2	12.7
Economics *	918	87.4	12.5	166	93.9	6.0	195	90.7	9.2
English	2549	81.9	18.1	68	76.4	23.3	395	78.2	21.8
Engineering	208	77.9	22.1	12	83.3	16.7	21	61.9	38.1
Finance *	820	79.6	20.4	198	89.9	10.1	200	83.5	16.5
Fine Arts	66	93.9	.6.1	11	90.9	9.1	10	100.0	—
French	814	83.7	16.3	21	90.5	9.5	75	88.0	12.0
German	298	70.5	29.5	1	100.0	—	35	68.6	31.4
History	104	74.0	26.0	12	66.7	33.3	58	87.9	12.1
Math	378	74.1	25.9	46	65.2	34.8	57	75.4	24.6
Physics	102	82.3	17.8	7	85.7	17.3	17	76.5	23.5
Psychology *	4689	79.2	20.8	267	85.8	14.2	666	82.1	17.9
Sociology	448	87.1	13.0	71	95.8	4.2	155	89.7	10.3
Spanish	1233	74.4	25.6	40	62.5	37.5	121	77.7	22.3

* Chi-square analysis showed difference to be significant ($p < .05$).

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